Remarks:

Claims 1 - 15 are pending in the present application. Claims 1-15 are rejected. Claim 1 is currently amended. No new matter is added.

Applicants would like to thank the examiner David Brown II and his supervisor Joseph Del Sole for conducting a telephone interview with the applicants attorney on September 21, 2009 and applicants appreciate the courtesies extended to applicants during the interview.

During the interview, the differences as discussed below between applicants invention and the cited reference U.S. Patent 4,107,244 to Ochai were discussed as mentioned in the interview summary of September 22, 2009.

Claim Rejection Under 35 U.S.C. § 102

Claims 1-4, 6, 10 and 11 are rejected under U.S.C. § 102(b) as being anticipated by US Patent 4,107,244 (Ochiai). Applicants respectfully traverse the rejection of the claims.

Applicant's claimed invention as amended is directed to a method for repairing a protective lining of a vessel which comprises the steps of comparing the measured residual thickness of the lining with a predetermined threshold value and assigning a binary value of "1" to areas of the lining having a thickness below the predetermined threshold value and assigning the binary value "0" to areas of the lining having a thickness equal to or higher than the predetermined threshold value (or vice versa) and in a second step combines discrete isolated areas having a thickness below the predetermined threshold value into adjacent combined areas of the lining to which the binary value for areas of the lining having a thickness below the predetermined threshold is assigned such that an adjacent combined area has a portion which was identified in the first step as having a binary value which indicated that the portion had a

measured residual thickness which was equal to or higher than the predetermined threshold value, and in a third step computes the position and repair sequence of each of the combined areas and transfers the data to a repair device and monolithic lining material is applied onto the combined areas.

The step of combining discrete isolated areas can be seen in Fig. 3 as compared to Fig. 2. A comparison of the areas identified in Fig. 2 with the areas identified in Fig. 2 shows the following: by combining discrete isolated areas of the lining having a thickness less than a predetermined threshold value, portions of the lining which originally were designated as having a binary value which indicated that portion had a thickness which was equal to or greater than the predetermined threshold thickness. value are now part of a combined area which has been assigned a binary value which indicates that the combined area has a thickness less than the predetermined threshold value. Therefore, in applicants method some areas which normally do not need to be repaired are repaired as can clearly be seen in Fig. 3. However, the benefits of applicants method is that the repair process can occur in a much shorter time on the whole even though areas which do not need to be repaired are repaired. This process step in applicants method is described in paragraph 19 of the specification as a defragmentation step.

In Ochiai, a method and an apparatus for repairing a container are described in which as described in column 4, lines 24 to 28 a microwave is reflected off the surface of the wear lining and enter the reception unit. The distance r from the reference position to the surface of the wear lining is obtained and stored in memory with the signal position. The new signals received are compared to set profile and the difference corresponds to the damage amount. The refractory damage thickness of the particular horizontal cross section which is being scanned can be obtained. Further when the measuring rod 8 is moved vertically along the center axis of the furnace, the damage thickness of other sections of the furnace can be obtained.

Actual repair of the damaged portions of the furnace occur in a simple manner as described in column 5, lines 17 to 30. The measured profile r and the reference profile r_0 are compared and the difference damage amount is stored as stated above. When

the difference (damage amount) exceeds the repair reference, a signal is sent to the controller of the repair apparatus to start the repair operation. The operation described in Ochiai occurs without any combining of discrete areas of the lining to be repaired.

The operation of Ochiai is performed simply based on whether the difference between the measured profile and the reference profile is greater than a present amount.

In stark contrast to the procedure of Ochiai as described above, according to applicants invention a separate defragmentation step is performed which combines discrete isolated areas of the lining into adjacent combined areas. The adjacent combined areas include portions which do not need to be repaired however two or more areas which have a binary value which indicates as needing to be repaired are combined and assigned a value which indicates that the combined areas need repair even though it includes a portion which technically does not need to be repaired. In the method of Ochiai, areas which are identified as needing repair as simply repaired upon identification of them as needing repair. No such defragmentation step as is present and described above in applicant's invention takes place in Ochiai.

Therefore, as at least one claimed feature of applicant's invention is not present in the claimed invention, reconsideration of the rejected claims 1-4, 6, 10 and 11 and their allowance are respectfully requested.

Claim Rejection Under 35 U.S.C. § 103

Claims 5 and 7 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Ochiai as applied to claim 4 (for claim 5) or claim 6 (for claim 7). Applicants respectfully traverse the rejection of the claims.

In the rejection on page 5 it is stated that claims 5 and 7 which depend from claim 1 are rendered obvious by Ochiai. In the rejection the examiner admits that Ochiai is silent as to whether a ladle is being repaired in the Ochiai reference and whether Ochiai discloses using a laser-based measuring device. It is then stated that one of ordinary skill in the art would use the operation of Ochiai to repair ladles and use

a mirror scanner. Applicants submit that in view of the above modifications of the Ochiai reference one of ordinary skill in the art still would not have arrived at applicants invention as the combination still lacks the claimed feature of a step of combining isolated areas into adjacent combined areas which are assigned a binary value the same as the isolated areas such that an adjacent combined area has a portion which was identified in the first step as having a binary value which indicated that the portion had a measured residual thickness which was equal to or higher than the predetermined threshold value.

Therefore, reconsideration of the rejected claims 5 and 7 and their allowance are respectfully requested.

Claims 8 and 9 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Ochiai as applied to claim 1 and in view of US Patent 4,690,328 (Roehl). Applicants respectfully traverse the rejection of the claims.

In the rejection on page 6, the Roehl reference has been combined with the Ochiai reference on the grounds that Roehl allegedly teaches a tilting mechanism for a device applying refractory material and a spray nozzle. Applicants submit that in view of the above modifications of the Ochiai reference by the Roehl reference one of ordinary skill in the art still would not have arrived at applicants invention because the above claimed feature of a step of combining isolated areas into adjacent combined areas which are assigned a binary value the same as the isolated areas is still not present in the combination such that an adjacent combined area has a portion which was identified in the first step as having a binary value which indicated that the portion had a measured residual thickness which was equal to or higher than the predetermined threshold thickness value.

Therefore, reconsideration of the rejected claims 8 and 9 and their allowance are respectfully requested.

Claims 12-15 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Ochiai as applied to claim 1 and in view of US Patent Application Publication 2002/0158368 (Wirth). Applicants respectfully traverse the rejection of the claims.

In the rejection, the Wirth reference has been combined with the Ochiai reference on the grounds that Wirth allegedly teaches a rectangular or cylindrical coordinate system. Applicants submit that in view of the above modifications of the Ochiai reference by the Wirth reference one of ordinary skill in the art still would not have arrived at applicants invention because the above claimed feature of a step of combining isolated areas into adjacent combined areas which are assigned a binary value the same as the isolated areas such that an adjacent combined area has a portion which was identified in the first step as having a binary value which indicated that the portion had a measured residual thickness which is equal to or higher than the predetermined threshold value is still not present in the combination of references.

Therefore, reconsideration of the rejected claims 12-15 and their allowance are respectfully requested.

Applicants respectfully request reconsideration of the rejections set forth in the Office Action of May 19, 2009.

In view of the foregoing amendments and remarks, Applicant submits that this application is in condition for allowance. Early notification to that effect is respectfully requested.

The Assistant Commissioner for Patents is hereby authorized to charge Deposit Account **13-3639** the fee of $490, which is the fee required under 37 CFR 1.136(a) to extend the period for filing a reply by one month and to charge any additional fees or to credit any excess payment that may be associated with this communication.

Respectfully submitted,

Dated: October 19, 2009

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